Name _____ Date _____

3-3 Study Guide

Solving Proportions

A **proportion** is an equation that shows that two ratios are equivalent. To determine if a pair of ratios form a proportion, find the *cross products.*

Examples **Determine whether each pair of ratios forms a proportion.**

1 $\frac{30}{48}$ **and** $\frac{15}{24}$

Find the cross products.

$30 \times 24 = 720$ $\quad$ $48 \times 15 = 720$

Since the cross products are equal, the ratios form a proportion.

2 $\frac{20}{24}$ **and** $\frac{12}{18}$

Find the cross products.

$20 \times 18 = 360$ $\quad$ $24 \times 12 = 288$

Since the cross products are not equal, the ratios do not form a proportion.

You can also use cross products to solve proportions.

Example 3 **Solve** $\frac{12}{30}$ **and** $\frac{k}{70}$.

$30 \times k = 12 \times 70$

$30k = 840$

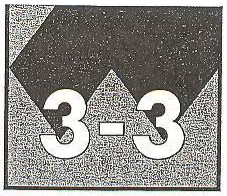
$k = 28$ The solution is 28.

Determine whether each pair of ratios forms a proportion.

1. $\frac{4}{6}, \frac{16}{24}$
2. $\frac{15}{25}, \frac{10}{20}$
3. $\frac{9}{12}, \frac{10}{15}$
4. $\frac{27}{72}, \frac{12}{32}$
5. $\frac{7}{15}, \frac{13}{32}$
6. $\frac{10}{24}, \frac{6}{14}$
7. $\frac{32}{12}, \frac{56}{21}$
8. $\frac{15}{6}, \frac{10}{3}$

Solve each proportion.

9. $\frac{3}{4} = \frac{m}{16}$
10. $\frac{y}{3} = \frac{9}{27}$
11. $\frac{12}{y} = \frac{3}{5}$
12. $\frac{2}{7} = \frac{14}{x}$
13. $\frac{7}{15} = \frac{21}{c}$
14. $\frac{9}{r} = \frac{18}{24}$
15. $\frac{p}{5} = \frac{5}{25}$
16. $\frac{11}{2} = \frac{m}{8}$



Name _____ Date _____

Practice

Solving Proportions

Determine whether each pair of ratios forms a proportion.

1. $\frac{8}{12}, \frac{12}{18}$

2. $\frac{4}{6}, \frac{5}{9}$

3. $\frac{5}{10}, \frac{6}{12}$

4. $\frac{8}{10}, \frac{12}{15}$

5. $\frac{9}{12}, \frac{12}{18}$

6. $\frac{15}{10}, \frac{9}{6}$

7. $\frac{28}{35}, \frac{8}{10}$

8. $\frac{16}{18}, \frac{24}{27}$

9. $\frac{5}{12}, \frac{7}{14}$

10. $\frac{16}{36}, \frac{24}{53}$

Solve each proportion.

11. $\frac{a}{3} = \frac{10}{15}$

12. $\frac{m}{4} = \frac{7}{14}$

13. $\frac{8}{14} = \frac{12}{y}$

14. $\frac{28}{35} = \frac{8}{w}$

15. $\frac{5}{10} = \frac{4}{n}$

16. $\frac{c}{21} = \frac{4}{6}$

17. $\frac{x}{13} = \frac{12}{26}$

18. $\frac{9}{d} = \frac{15}{40}$

19. $\frac{16}{20} = \frac{p}{15}$

20. $\frac{3}{7} = \frac{e}{4}$

21. $\frac{n}{85} = \frac{7}{119}$

22. $\frac{44}{72} = \frac{x}{108}$